

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently Amended) A method for invalidating a resource record in a
2 local cache at a client computer system within a network, comprising:
3 retrieving the resource record from the local cache at the client;
4 issuing one or more queries for the resource record;
5 waiting for a response to the query; and
6 if the response to the query is not received in a pre-determined amount of
7 time and after issuing a predetermined number of queries for the resource record,
8 invalidating the resource record at the client, ~~wherein invalidating the resource~~
9 ~~record further comprises invalidating a child resource record of the resource~~
10 ~~record.~~
- 1 2 (Canceled).
- 1 3. (Original) The method of claim 1, further comprising:
2 receiving a multicast message from a second client querying a second
3 device;
4 locating a second resource record associated with the second device;
5 waiting for a multicast response to the multicast query; and
6 if after a pre-determined number of queries the multicast response to the
7 multicast query is not received in the pre-determined amount of time, invalidating
8 the second resource record.

1 4. (Canceled)

1 5. (Original) The method of claim 1, wherein if the response to the query
2 is not received in a pre-determined amount of time, the method further comprises:
3 retrieving a parent record of the resource record at the client, wherein the
4 parent record refers to the resource record;
5 issuing a query for the parent record;
6 waiting for a response to the query from the device; and
7 if the response to the query is not received in a pre-determined amount of
8 time, invalidating the parent record, and then repeating the above process by
9 applying it recursively to any records that refer to the now-invalidated parent
10 record.

1 6. (Original) The method of claim 1, wherein if the response to the query
2 is not received in a pre-determined amount of time, the method further comprises:
3 retrieving a parent record of the resource record at the client, wherein the
4 parent record refers to the resource record;
5 issuing a query for the parent record;
6 receiving a response to the query from the device, wherein the response
7 includes information for updating the resource record; and
8 updating the resource record with the information received in the
9 response.

1 7. (Original) The method of claim 6, wherein the method further
2 comprises updating the parent record with the information received in the
3 response.

1 8. (Original) The method of claim 1, wherein the method is invoked at a
2 pre-specified time interval.

1 9. (Currently Amended) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a
3 method for invalidating a resource record in a local cache at a client computer
4 system within a network, the method comprising:
5 retrieving the resource record from the local cache at the client;
6 issuing one or more queries for the resource record;
7 waiting for a response to the query; and
8 if the response to the query is not received in a pre-determined amount of
9 time and after issuing a predetermined number of queries for the resource record,
10 invalidating the resource record at the client, ~~wherein invalidating the resource~~
11 ~~record further comprises invalidating a child resource record of the resource~~
12 ~~record.~~

1 10 (Canceled).

1 11. (Original) The computer-readable storage medium of claim 9, wherein
2 the method further comprises:
3 receiving a multicast message from a second client querying a second
4 device;
5 locating a second resource record associated with the second device;
6 waiting for a multicast response to the multicast query; and
7 if after a pre-determined number of queries the multicast response to the
8 multicast query is not received in the pre-determined amount of time, invalidating
9 the second resource record.

1 12. (Canceled)

1 13. (Original) The computer-readable storage medium of claim 9, wherein
2 if the response to the query is not received in a pre-determined amount of time,
3 the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 waiting for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, invalidating the parent record, and then repeating the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 14. (Original) The computer-readable storage medium of claim 9, wherein
2 if the response to the query is not received in a pre-determined amount of time,
3 the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 receiving a response to the query from the device, wherein the response
8 includes information for updating the resource record; and
9 updating the resource record with the information received in the
10 response.

1 15. (Original) The computer-readable storage medium of claim 14,
2 wherein the method further comprises updating the parent record with the
3 information received in the response.

1 16. (Original) The computer-readable storage medium of claim 9, wherein
2 the method is invoked at a pre-specified time interval.

1 17. (Currently Amended) An apparatus that invalidates a resource record
2 in a local cache at a client computer system within a network, comprising:
3 a retrieval mechanism at the client configured to retrieve the resource
4 record from the local cache at the client; and
5 an invalidation mechanism configured to,
6 issue one or more queries for the resource record,
7 wait for a response to the query, and
8 if the response to the query is not received in a pre-
9 determined amount of time and after issuing a predetermined
10 number of queries for the resource record, to invalidate the
11 resource record at the client, ~~wherein invalidating the resource~~
12 ~~record further comprises invalidating a child resource record of the~~
13 ~~resource record.~~

1 18 (Canceled).

1 19. (Original) The apparatus of claim 17, wherein the invalidation
2 mechanism is configured to:
3 receive a multicast message from a second client querying a second
4 device;
5 locate a second resource record associated with the second device;
6 wait for a multicast response to the multicast query; and
7 if after a pre-determined number of queries the multicast response to the
8 multicast query is not received in the pre-determined amount of time, to invalidate
9 the second resource record.

1 20. (Canceled)

1 21. (Original) The apparatus of claim 17, wherein if the response to the
2 query is not received in a pre-determined amount of time, the invalidation
3 mechanism is additionally configured to:
4 retrieve a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issue a query for the parent record;
7 wait for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, to invalidate the parent record, and to then repeat the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 22. (Original) The apparatus of claim 17, further comprising an updating
2 mechanism, wherein if the response to the query is not received in a pre-
3 determined amount of time, the updating mechanism is configured to:
4 retrieve a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issue a query for the parent record;
7 receive a response to the query from the device, wherein the response
8 includes information for updating the resource record; and to
9 update the resource record with the information received in the response.

1 23. (Original) The apparatus of claim 22, wherein the updating
2 mechanism is additionally configured to update the parent record with the
3 information received in the response.

1 24. (Original) The apparatus of claim 17, wherein the apparatus is
2 invoked at a pre-specified time interval.

1 25–34. (Canceled)

1 35. (New) The method of claim 1 wherein invalidating the resource record
2 further comprises invalidating a child resource record of the resource record.

1 36. (New) The computer-readable storage medium of claim 9, wherein
2 invalidating the resource record further comprises invalidating a child resource
3 record of the resource record.

1 37. (New) The apparatus of claim 17, wherein invalidating the resource
2 record further comprises invalidating a child resource record of the resource
3 record.

1 38. (New) A method for invalidating a resource record in a local
2 cache at a client computer system, comprising:
3 determining that a device that provides a service on a network or a service
4 on the network is to be validated;
5 if a device is to be validated, looking up a device record for the device in
6 the cache and using the device record to look up an associated service record,
7 otherwise, if a service is to be validated, looking up the service record in the
8 cache;
9 determining an address record in the service record and using a host
10 address and a port number in the address record to send a query to the service on
11 the network;
12 if the service responds within a predetermined time, validating the service
13 record;
14 if the service does not respond within the predetermined time, resending
15 the query to the service until the service responds or until a predetermined
16 number of queries has been sent

17 upon sending the predetermined number of queries without receiving a
18 response, invalidating the address record and marking the service record as
19 suspect;
20 querying the service by sending a broadcast message to the entire
21 network and waiting a predetermined time for a response;
22 if the service responds, updating address record with
23 address information included in the response;
24 if the service does not respond after a predetermined time
25 and a predetermined number of queries, invalidating the service
26 record.

1 39. (New) The method of claim 38, wherein the method further
2 comprises:
3 upon invalidating the service record, marking an associated device record
4 as suspect;
5 querying the device in the device record by sending a broadcast message
6 to the entire network and waiting a predetermined time for a response;
7 if the device responds, updating the service record and the address record
8 with information in the response;
9 if the device does not respond after the predetermined time,
10 resending the broadcast message to the entire network until the
11 device responds or until a predetermined number of queries has been sent,
12 and
13 if the device responds, updating the service record and the
14 address record with information in the response;
15 otherwise, invalidating the device record.